RECOMMENDED CUTTING CONDITIONS

Dry cutting

	Work Material	Hardness	Grade	vc (m/min)	Finish—Light Cutting L, M Breaker		Light—Rough Cutting M, R Breaker		Medium—Heavy Cutting R, H Breaker	
					fz (mm/t.)	ap(mm)	fz (mm/t.)	ap(mm)	fz (mm/t.)	ap(mm)
P	Mild Steel (ASTM A36, AISI 1010)	≤180HB	MP6120 VP15TF	250 (200—300)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			MP6130 VP20RT	240 (190—290)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
	Carbon Steel Alloy Steel (AISI 1045, AISI 4140, AISI 4340)	180—350HB	MP6120 VP15TF	220 (170—270)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			MP6130 VP20RT	200 (150—250)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
	Alloy Steel Pre-Hardened Steel (AISI D2, SKD61, SKT4, AISI P21, AISI P20)	35—45HRC	MP6120 VP15TF	140 (100—180)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			MP6130 VP20RT	120 (90—150)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
M	Austenitic Stainless Steel Ferritic and Martensitic Stainless Steel (AISI 304, AISI 316) (AISI 410, AISI 430, AISI 431, AISI 420)	—	MP7130 VP15TF VP20RT	200 (150—250)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
	Austenitic Stainless Steel (AISI 304LN, AISI 316LN)	>200HB	MP7130 VP15TF VP20RT	170 (120—220)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
	Two-phase Stainless Steel (AISI 329)	≤280MPa	MP7130 VP15TF VP20RT	160 (110—210)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
	Hardened Stainless Steel (AISI 630, AISI 631)	<450HB	MP7130 VP15TF VP20RT	150 (100—200)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
K	Gray Cast Iron (FC300)	Tensile Strength ≤350MPa	MC5020	220 (200—270)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			VP15TF VP20RT	180 (130—250)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
	Ductile Cast Iron (FCD700)	Tensile Strength ≤800MPa	MC5020	200 (180—250)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			VP15TF VP20RT	160 (110—240)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
H	Hardened Steel (AISI H13, JIS SKT4)	40—55HRC	VP15TF	50 (30—70)	0.05 (0.05—0.1)	≤1.5	0.1 (0.05—0.15)	≤2.0	—	—

* Refer to the table above and set the cutting conditions to match the application.
* Wet cutting is recommended, when focusing on the surface finish. (Life is lower than dry cutting.)

Wet cutting

	Work Material	Hardness	Grade	vc (m/min)	Finish—Light Cutting L, M Breaker fz (mm/t.)	Finish—Light Cutting L, M Breaker ap(mm)	Light—Rough Cutting M, R Breaker fz (mm/t.)	Light—Rough Cutting M, R Breaker ap(mm)	Medium—Heavy Cutting R, H Breaker fz (mm/t.)	Medium—Heavy Cutting R, H Breaker ap(mm)
P	Mild Steel (ASTM A36, AISI 1010)	≤180HB	MP6120 VP15TF	150 (100—200)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			MP6130 VP20RT							
	Carbon Steel Alloy Steel (AISI 1045, AISI 4140, AISI 4340)	180—350HB	MP6120 VP15TF	120 (80—160)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			MP6130 VP20RT							
	Alloy Steel Pre-Hardened Steel (AISI D2, SKD61, SKT4, AISI P21, AISI P20)	35—45HRC	MP6120 VP15TF	100 (80—120)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			MP6130 VP20RT							
M	Austenitic Stainless Steel Ferritic and Martensitic Stainless Steel (AISI 304, AISI 316) (AISI 410, AISI 430, AISI 431, AISI 420)	—	MP7130 VP15TF VP20RT	130 (80—180)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
	Austenitic Stainless Steel (AISI 304LN, AISI 316LN)	>200HB	MP7130 VP15TF VP20RT	100 (80—150)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
	Two-phase Stainless Steel (AISI 329)	≤280MPa	MP7130 VP15TF VP20RT	100 (80—150)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
	Hardened Stainless Steel (AISI 630, AISI 631)	<450HB	MP7130 VP15TF VP20RT	90 (50—140)	0.15 (0.1—0.2)	≤2.0	0.2 (0.15—0.25)	≤3.0	—	—
K	Gray Cast Iron (FC300)	≤350MPa	MC5020	180 (160—200)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			VP15TF VP20RT	130 (100—160)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
	Ductile Cast Iron (FCD700)	≤800MPa	MC5020	180 (160—200)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
			VP15TF VP20RT	110 (80—140)	0.15 (0.1—0.2)	≤3.0	0.2 (0.15—0.25)	≤4.0	0.25 (0.2—0.3)	≤5.0
N	Aluminium Alloy	—	TF15	300—	0.2 (0.1—0.3)	≤5.0	—	—	—	—
S	Titanium Alloy (Ti-6Al-4V)	—	MP9120 VP15TF VP20RT	50 (40—60)	0.05 (0.05—0.1)	≤1.5	0.1 (0.05—0.15)	≤2.0	—	—
	Heat Resistant Alloy (Inconel®718)	—	MP9120 VP15TF VP20RT	40 (20—50)	0.05 (0.05—0.1)	≤1.5	0.1 (0.05—0.15)	≤2.0	—	—
H	Hardened Steel (AISI H13, JIS SKT4)	40—55HRC	VP15TF	50 (30—70)	0.05 (0.05—0.1)	≤1.5	0.1 (0.05—0.15)	≤2.0	—	—

* Refer to the table above and set the cutting conditions to match the application.
* Wet cutting is recommended, when focusing on the surface finish. (Life is lower than dry cutting.)